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The Development of Veterinary Anatomical Term Learning Media for 2nd Year Students in Faculty of Veterinary Medicine, Khon Kaen University

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Abstract

Small Animal Anatomy is an important basic science core course in Veterinary Curriculum. The animal that used in this course is dog, a closely companion animal. Students had to study about neck, thorax, abdomen, pelvis, head and legs according the region of dog's body. Because of its importance, the desirable achievement criterion for this course is more than 80 %. But the academic performance of students in this course in the past years never meet the criterion. The purpose of this study was to develop and evaluate the supplementary media for the veterinary students at Khon Kaen University to self study at least one hour per week for successful in learning anatomical term of the dog's body. The media was a small Thai text book with exercise about the roots of the academic terms, and how to make the prefix and suffix with the root terms. The subjects were 102 Veterinary students enrolled in Small Animal Anatomy course in the first semester of academic year 2010, Khon Kaen University. A pretest – posttest, one group design was used in this study. Data were collected via the laboratory and oral tests of academical term. The results showed that the posttest mean scores of both laboratory exam (\bar{X} = 27.74, SD = 1.18) and oral exam (\bar{X} = 8.34, SD = 0.10) were higher than the pretest mean scores at .05 level of significance, and able to meet the criterion of the course (average lab score was 92.46 %, average oral score was 83.40%). So, this learning media had the potential to promote better understanding of the anatomical terminology.

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Introduction

The term anatomy stems from the Ancient Greek word, 'anatemnein' which *ana*, mean "separate, apart from", and *temnein*, mean "to cut up, cut open", so anatomy means to dissect, to cut part (Budras et al., 2007). Anatomy is a branch of biology and medicine that is the consideration of the structure of living things. In its entirety, anatomy is subdivided into macroscopic (gross) anatomy, microscopic anatomy, and embryology. Gross anatomy, the study of structures that can be dissected and observed with the unaided eye or with a hand lens, form the subject matter while the study of structures too small to be seen without a light microscope is Microscopic anatomy. The study of the development of the individual from the fertilized oocyte to birth is embryology. In some of its facets Gross anatomy is closely related to Embryology, Comparative anatomy and comparative embryology, through common roots in evolution. Modern anatomy is not only limited to mere description but also emphasizes the interrelations between structure and function as well as the application of anatomical knowledge in the clinic.

History of anatomical terminology has more than 2,000 years, showing the influence of languages around the world. The language is written in medical terminology and anatomy has been influenced by Greek and Latin. Although anatomical terminology has been rather uniform, differences in terms have arisen between the different fields and different countries, there was a group of anatomists proposed a standard list of terms derived from those in use throughout the world in 1895 call *Terminologia Anatomica* contains terminology for about 7500 human gross anatomical structures (Federative International Committee on Anatomical Terminology, 2009). In the field of veterinary Science, the International Committee on Veterinary Anatomical Nomenclature (ICVAN), appointed by the World Association of Veterinary Anatomists in 1957, published *Nomina Anatomica Veterinaria* (NAV) for domestic mammals in 1968. These terms, as revised in the fifth edition in 2005 (published on the Worldwide Web), serve as the basis for the nomenclature (Evans and de Lahunta, 2010). The anatomists used roots, suffixes, and prefixes in ancient Latin and Greek language to produced Anatomical terms with their meanings, and their etymology. Prefixes are placed before the root term and suffixes are added after such as the medical term "pericarditis", which means "inflammation of the outer layer of the heart". pericarditis can be divided into three parts: peri - card – it is, : the prefix "peri" translates to "surrounding", the root "card" translates to "heart", and the suffix "itis" translates to "inflammation". Hence, pericarditis is an inflammation of the area surrounding the heart, or an inflammation of the outer layer of the heart, anatomically known as the pericardium. Another example, ante-, meaning before, brachium meaning arm so antebrachium the forearm.

Veterinary anatomy is a subject study about bones, muscles, organs and other structures that make up the body of the domestic animals. Being understand normal animal structure (Anatomy) helps comprehend body function (Physiology), defines the landmark for surgery, and aids in the diagnosis of disease when these structure work abnormal performance (deLahunta and Habel, 1986). Veterinary Anatomy is the basic science course that essential for most veterinary curriculum including the curriculum of Veterinary Medicine in Thailand. The basic science of anatomy is important in the clinical course such as Pathology, Surgery, and Medicine (Dyce et al., 2010), so education and understanding of anatomical terminology can link structural knowledge to mechanisms of development (pathogenesis), structural alterations of cells (morphologic changes), and the consequences of changes to animal diseases.

By studying the anatomy of the body not only divided into region (e.g. neck, thorax, abdomen, pelvis, head and legs according the region of dog's body) but also be divided by a system divided by the corresponding functions of the organs; for example skeletal, muscular, digestive, respiratory circulatory, endocrine, reproductive and urinary system. The skeleton system is the basis of all systems in the body and important to most animals. The skeleton compose of bone and cartilage that provides the framework and protects organs of the body (Evans, 1993). A thorough understanding of the bone and relationships between the bones and muscles facilitates learning the muscular attachments and functions (Evans and de Lahunta, 2010).

The veterinary students who study dog's anatomy is confronted with many array of unfamiliar terms and names of anatomical structures, so they can't remember the confusion in terminology and the meaning of the name. A better understanding of the language of anatomy helps make its study more intelligible and interesting (Evans and de Lahunta, 2010).

At Khon Kaen University, the desirable achievement criterion for veterinary anatomy course is more than 80 %. Since the academic performance of students in this course in the past years never meet the criterion, we had studied the problem of teaching and learning in this course for many years. Most of the students said that they could not remember anatomical vocabulary especially when they took oral or laboratory examination test. Some said they did not know the meaning and make connections with other organs. Because oral or laboratory achievement will

affect the clinical course of the next level, therefore, we decided to promote the achievement in oral and laboratory tests first. By developing the self study media, and hope that the students can use it as a guide for their successful learning.

The purpose of this study was to develop and evaluate the Veterinary Anatomical Term Learning Media emphasis on anatomical term of the dog's skeleton for the second year of veterinary students at Khon Kaen University. The Veterinary Anatomical Term Learning Media was a small Thai text book with exercise about the roots of the academic terms, and how to make the prefix and suffix with the root terms and their meaning. For example, "arthritis" is composed of arthr- and - itis ; the root " arthr- " means "joint", and the suffix "itis" means "inflammation" , so "arthritis" means "joint inflammation".

Methodology

Samples

The target subjects were 102 second year veterinary students who enrolled in Small Animal Anatomy course in the first semester of academic year 2010, Khon Kaen University.

Method

A pretest-posttest, one group design was used in this study. Data were collected via the test of academical term in laboratory and oral. We also surveyed students' satisfaction toward the media, using a satisfaction rating scale, too.

The laboratory and oral tests were standard tests that randomized from a pool of items that use in the Department of Anatomy, Faculty of Veterinary Medicine, Khon Kaen University.

After collecting the pretest data, we told the students how to use the Veterinary Anatomical Term Learning Media and let them spend their free time for at least one hour per week using this media. The study was taken over three weeks, and the posttest data were collected.

Analyzing Data

Percentage, Mean(\bar{x}) and standard deviation (SD) were used in analyzing the data. The criteria for satisfaction scores were as follow :

- 4.51 to 5.00, meaning the highest satisfaction.
- 3.51 to 4.50, meaning a high level of satisfaction.
- 2.51 to 3.50 a moderate level of satisfaction.
- 1.51 to 1.50, meaning a low level of satisfaction.
- 1.00 to 1.50, meaning a minimum level of satisfaction.

Results

1. Descriptive statistics of laboratory and oral test scores and the pair t test between pretest and posttest mean scores were presented in Table 1 and 2

Table 1 Descriptive statistics of laboratory test scores and the pair t-test between pretest and posttest mean scores

	laboratory test scores (30 points)					
	Max	Min	Mean	SD	SE	t
pretest	23(76.67%)	14(46.66%)	19.00(63.00%)	2.27	0.25	30.79*
posttest	30(100%)	23(76.67%)	27.74(92.46%)	1.88	0.19	

*p<0.05

Table 2 Descriptive statistics of oral test scores and the pair t-test between pretest and posttest mean scores

	oral test scores (10 points)					
	Max	Min	Mean	SD	SE	t
pretest	5(50%)	1(10%)	2.41(24.10%)	1.10	0.11	34.96*
posttest	10(100%)	6(60%)	8.34(83.40%)	1.10	0.10	

*p<0.05

Table 1 showed that before using the media, the students' laboratory test scores were in the range of 14(46.66%) to 23(76.67%) but after using the media, the range was 23(76.67%) to 30(100%). The post test mean score was higher than the pre test mean score at 0.05 level of significance. The same as table 2 which showed that before using the media, the students' oral test scores were in the range of 1(10%) to 5(50%) but after using the media, the range was 6(60%) to 10(100%), and the post test mean scores was higher than the pretest mean score at 0.05 level of significance.

2. The satisfaction mean score and SD were 4.32 and 0.61 respectively, indicated that it was the high level of satisfaction. (40.2% rank in the highest, 52.2% high and 7.8% moderate level of satisfaction).

Discussion

The results of this study showed that the Veterinary Anatomical Term Learning Media could enhance the students' laboratory posttest mean score up to 90% (\bar{X} = 27.74, SD = 1.18) due to their more understanding about roots, prefixes and suffixes. So we should provide this kind of terminology learning media in another laboratory learning.

In most country, oral examination is a tradition assessment method that can test the knowledge and understanding in health science students especially medical and veterinary students. Recently, Niehaus et al., (2012) found that medical students at the University of Stellenbosch, South Africa during 2008 and 2009 who had stress and anxiety in the oral and objective structured clinical examination (OSCE) cause poorer performance. In this study, after using the learning media, the oral examination scores of some students reach up to 100 % (the maximum score in pretest just only 50%). So, the Veterinary Anatomical Term Learning Media possibly reduce the stress and anxiety of students, which will be further researched in the next year.

Conclusion

Although it is only a pilot study, this Veterinary Anatomical Term learning media had the potential to promote better understanding of the anatomical terminology. The results confirm that we are in the correct way in promoting Thai students' learning ability in academic terms. Suggested that we should encourage to development this kind of media for health science students who had to study the academic terms which are not their native language.

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